

Remarks

Applicants and the undersigned thank Examiner Mulcahy for carefully reviewing this application. Applicants submit the following remarks in support of the pending claims. Reconsideration of the application in view of the following remarks is respectfully requested.

By the present communication claims 1-11 and 26 have been maintained in their original or previously presented form. Claims 12-25 were previously withdrawn from consideration. Thus, claims 1-26 are currently pending and claims 1-11 and 26 are under active prosecution.

Rejection Under 35 USC § 103(a)

Claims 1-11 and 26 have been rejected as allegedly being obvious over U.S. Pat. No. 3,865,767 (hereinafter "Boberg"), in view of U.S. Pat. No. 5,434,277 (hereinafter, "Hwu"). Applicants respectfully disagree and traverse the rejection.

By way of background, the present invention is primarily directed to a method for the manufacture of an additive to thermoplastic materials, which after being added to the thermoplastic materials, provides the thermoplastic materials with specific degradable properties, while at the same time providing very little influence as to the color of the thermoplastic material. It is also of importance that the "raw" properties of the thermoplastic materials are not deteriorated, so that the common methods for preparing the thermoplastic materials can still be employed.

One novel characterizing feature of the present invention, as claimed, includes the step of allowing the metal salt to react with a C₈ to C₂₄ fatty acid or fatty acid derivative in a process in which an oxidizing agent is employed to ensure that all of the metal present is in its highest oxidation state in the end product. Thus, the methods of the claimed invention provide a method

for preparing an additive for controlling degradation of a polymer that includes a metal, and wherein the metal is in its highest oxidation state.

With respect to claim 1, contrary to what is asserted in the Office Action, the combination of Boberg and Hwu does not describe the invention as presently claimed. More specifically, the references fail to disclose a method for preparing an additive for providing controllable degradation of thermoplastics. Boberg describes a polymer composition, that can include an additive, which is described as having the general formula $X-Fe$, wherein X can be a ligand selected from OH^- , Cl^- , Br^- , I^- , oxalate, acid citrate, NO_2^- , N_3^- , EDTA, carbonyl, nitrosyl or porphyrin derivatives. Boberg completely fails to describe how the additive is prepared, nor does Boberg specify that an oxidizing agent is used to ensure that the metal is present in its highest oxidation state, as specified in the claims. Hwu does not remedy the deficiencies of Boberg.

Boberg specifically discloses an iron hydroxide species ($Fe^{3+}(OH^-)$), which is reduced by light ($h\nu$) to form the complex $/Fe^{3+}OH^-/$, which then disintegrates into a hydroxyl radical. The hydroxyl radical through a series of assumed reactions, assists in the formation of a peroxy radical, which is suggested to oxidize the iron back to Fe^{3+} . As described by Boberg, however, the presence and function of the hydroperoxides in the Boberg plastic material in which the iron compound is used is completely different than the claimed methods. The source of the of the hydroperoxides disclosed in Boberg is assumed to be from the preparation of the thermoplastic material and the influence of UV light, the iron compound as such, and possible contaminants in the thermoplastic material. This is described in Boberg as a known phenomenon.

Applicants further disagree that Boberg ensures that the highest oxidation state of the metal is attained, as specified in claim 1. The method for producing the additive of claim 1 specifically states that the reaction between the metal salt and the fatty acid or fatty acid

derivative is in the presence of an oxidizing agent. This oxidizing agent ensures that the metal is in its highest oxidation state at the time the additive is prepared. In contrast, the oxidants in Boberg are produced as a result of photoreduction of the iron hydroxide compound (Fe^{3+}OH), rather than being added to the reaction mixture. Sunlight or another light source is required for the photoreduction of the iron complex.

With respect to Hwu, and the assertion that Hwu may anticipate the present claims, Applicants respectfully disagree. Contrary to what the Office Action appears to say, Hwu does not describe the reaction of the metal salt with a fatty acid or fatty acid derivative in the presence of an oxidizing agent. Complete saponification of the stearic acid does not result in an oxidizing atmosphere (col. 4, lines 64+). Furthermore, the oxides or hydroxides referenced in col. 1 are the sources of the metal species, and are not oxidizing species, as specified in the present claims.

Furthermore, with respect to claim 2, neither Boberg or Hwu, alone or in combination, disclose a method for preparing an additive that includes the step of reacting a metal salt with a fatty acid or fatty acid derivative in the presence of a 0.1 – 5% aqueous hydrogen peroxide solution.

With respect to claim 4, neither Boberg or Hwu, alone or in combination, disclose a method for preparing an additive that includes the step of reacting a metal salt with a fatty acid or fatty acid derivative in the presence of an oxidant that comprises air or oxygen enriched air.

With respect to claim 5, neither Boberg or Hwu, alone or in combination, disclose a method for preparing an additive that includes the step of reacting a metal salt with a fatty acid or fatty acid derivative in the presence of an oxidant, wherein the metal salt is a chloride. While Boberg discloses that Cl^- is a possible ligand for iron, such a compound would preclude the use

With respect to claim 5, neither Boberg or Hwu, alone or in combination, disclose a method for preparing an additive that includes the step of reacting a metal salt with a fatty acid or fatty acid derivative in the presence of an oxidant, wherein the metal salt is a chloride. While Boberg discloses that Cl⁻ is a possible ligand for iron, such a compound would preclude the use of OH⁻ as a ligand, which the Office Action has relied upon for the alleged presence of a peroxide, and which Applicants have argued against.

With respect to claim 7, neither Boberg or Hwu, alone or in combination, disclose the step of washing the metal compound with an aqueous solution of hydrogen peroxide at a temperature of between about 35-55°C for 1-3 hours to remove unreacted metal salt from the additive compound.

With respect to dependent claims 2-11 and 26, in addition to the specific patentable features described above, the claims are allowable at least because they depend from claim 1, which has been described as being allowable for the reasons above. Withdrawal of the rejection and allowance of all claims are respectfully requested.

Conclusion

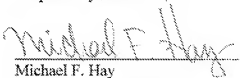
The foregoing is a full and complete Response to the Non-Final Office Action dated August 18, 2010. Applicant has made a diligent effort to advance the prosecution of the application by responding to the pending election of species requirement. Applicant has not acquiesced to any rejection and reserves the right to address the patentability of any additional claim features in the future. In view of the above, reconsideration and allowance of the claims and allowance are respectfully requested.

The three-month statutory period for reply expires on November 18, 2010. Applicant submits this response is timely filed. Should the Commissioner deem any fees as being due, including fees for extensions of time, the Commissioner is authorized to debit said fees from, or credit overpayments to, Bracewell & Giuliani LLP, USPTO Deposit Account Number 50-0259, Reference No. 061778.002.

The Examiner is requested to contact the undersigned via telephone if a telephone conference would expedite or aid the prosecution and examination of this application.

Respectfully submitted,

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